Space Weather Forecast

Issued on Monday 31 March 2025 at 13:36 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Minor/Moderate (R1/R2) radio blackouts Expected.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was High, with five low-level Moderate-class flares observed, all from the large region in the southeast disc. all most likely from the largest sunspot region in the southeast. Continued growth and consolation of spots was observed in its intermediate region, although magnetic shearing of the spots appears somewhat limited. Elsewhere, two regions in the northern central quadrant, maintained modest complexity and size, although appeared largely inactive. A region in the northeast retained a large main spot, along with numerous much smaller spots or pores of mixed polarity. The remaining regions on the disc are smaller and more magnetically simple.

Solar Wind / Geomagnetic Activity: Solar wind parameters were indicative of gradual waning fast winds, but recently followed by a Coronal Mass Ejection (CME) enhancement, starting around 31/1015 UTC. Solar wind speeds were slightly elevated to slow-ambient, with a peak of 494km/s at 31/1128 UTC. The Interplanetary Magnetic Field was predominantly Weak, but at weak levels, but with an increase to Moderate levels following passage of the CME. The north-south component varied weakly. Geomagnetic activity was largely Quiet (Kp1-2), but an Active (Kp4) interval was observed between 31/0900-1200 UTC.

Energetic Particles / Solar Radiation: S1/Minor Proton storm levels were briefly reached between 31/1105-1115 UTC, otherwise has been at normal background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to High activity is forecast with occasional to frequent Moderate-class flares expected and a slight chance of isolated Strong flares, mainly from a large region in the southeast of the visible disc.

Solar Wind / Geomagnetic Activity: Solar winds are generally expected to decline in the coming days, following recent solar fast wind and Coronal Mass Ejection (CME) influences, with speeds mainly at slightly elevated levels. Speeds may then increase to become more persistently slightly elevated from either Day 2 or Day 3 (01 or 02 Apr) owing to the expected connection to a relatively small coronal hole before likely declining again on Day 4 (03 Apr). Most CMEs in the last 24-48 hours are expected to miss Earth, however a slow CME from 29 Mar may be directed towards Earth, forecast to arrive during Day 3 (02 Apr).

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2025. All Rights Reserved.

Overall, predominantly Quiet to Unsettled geomagnetic activity is forecast through the period. However, there is a chance of isolated Active intervals and a slight chance of G1/Minor storm periods, mainly between Days 1-3 (31 Mar to 02 Apr) due to potential CME or coronal hole fast wind influences.

Energetic Particles / Solar Radiation: Solar radiation levels briefly reached the S1/Minor Storm level on Day 1 (31 Mar) due to a recent CME arrival, however, levels have since fallen back below this threshold. Although proton flux levels are expected to gradually decrease in the coming days, there remains a slight chance of exceeding the S1/Minor Storm threshold between Days 2-4 (01-03 Apr) should any further notable flares occur.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	No	10	20	20	5
Strong	**G3**	No	1	1	1	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	Yes	80	80	80	80
Very Active	**R3-R5 (X Class)**	No	15	15	15	15

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2025. All Rights Reserved.

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	100	20	20	20
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2025. All Rights Reserved.